

CLAIMS

I claim:

1. A printing device system comprising:

5 a printing device having firmware;

a replaceable printing device component storing a firmware patch for the
firmware, and coupled to the printing device; and

wherein the printing device is configured to patch the firmware patch into
the firmware.

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2. The printing device system defined in claim 1 wherein the replaceable printing
device component comprises a memory unit, and the printing device firmware
patch is stored in the memory unit.

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3. The printing device system defined in claim 2 wherein the replaceable printing
device component comprises terminals, the printing device comprises a computing
unit and a coupled communication link, and the terminals are operable to couple to
the communication link, such that the replaceable printing device component
memory unit couples to the printing device computing unit.

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4. The printing device system defined in claim 2 wherein the printing device
comprises a computing unit that is operable to couple to the replaceable printing
device component memory unit, the printing device computing unit is configured

to read the memory unit, and the replaceable printing device component memory unit is configured to be read by the computing unit.

5 5. The printing device system defined in claim 1 wherein the replaceable printing device component is further storing data indicating where to load the firmware patch on a memory of the printing device.

10 6. The printing device system defined in claim 1 wherein the replaceable printing device component is further storing data identifying a type of memory on which the firmware patch is to be loaded in the printing device.

7. The printing device system defined in claim 1 wherein the replaceable printing device component is further storing data identifying a version of the firmware patch.

15 8. The printing device system defined in claim 1 wherein the printing device comprises a non-volatile reprogrammable memory, and the printing device is configured to patch the firmware patch on the non-volatile reprogrammable memory when the firmware is stored on the non-volatile reprogrammable
20 memory.

9. The printing device system defined in claim 1 wherein the replaceable printing device component is further storing a patch load routine.

10. The printing device system defined in claim 1 wherein the printing device comprises a volatile RAM, and the printing device is configured to patch the firmware when the firmware is stored on the volatile RAM.

5 11. The printing device system defined in claim 1 wherein the printing device has a memory unit storing the firmware, and further storing instructions that cause the computing unit to patch the software patch into the firmware.

12. The printing device system defined in claim 1 wherein the printing device is
10 configured to check for firmware patches available from the replaceable printing device component.

13. The printing device defined in claim 1 wherein the printing device is
15 configured to read data associated with the firmware patch, and applying the firmware patch according to the data.

14. The printing device defined in claim 1 wherein the printing device is
configured to verify whether the media storing the firmware is compatible with the software object.

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15. The printing device defined in claim 1 wherein the replaceable printing device component stores data indicating the version of the firmware patch, and the printing device is configured to verify whether the version of the firmware patch is compatible with the firmware.

16. A replaceable printing device component comprising a memory unit storing a printing device firmware patch.

5 17. The device defined in claim 16 further comprising terminals to couple the memory to a printing device communication link.

18. The device defined in claim 16 wherein the memory unit is configured to be read by a coupled printing device computing unit.

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19. The device defined in claim 16 wherein the memory unit is further storing data identifying the firmware patch.

20. The device defined in claim 16 wherein the memory unit is further storing
15 data indicating where to load the firmware patch on a memory of the printing device.

21. The device defined in claim 20 wherein the data indicates at least one of a size
of the firmware patch, a starting address in the memory where the firmware patch
20 is to be loaded, and an ending address in the memory where the firmware patch is
to be loaded.

22. The device defined in claim 16 wherein the memory unit is further storing data identifying a type of printing device memory on which the firmware patch is to be loaded.

5 23. The device defined in claim 16 wherein the memory unit is further storing data identifying a version of the firmware patch.

24. The device defined in claim 16 wherein the memory unit is further storing a patch load routine.

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25. A printing device comprising:

a memory unit to store firmware;

a processing unit coupled to the memory unit; and

at least one of

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a patch load routine stored in the memory unit that when executed by the processor, causes the processor to perform actions comprising patching firmware stored on the memory unit from a software object stored on a coupled replaceable printing device component; and

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a routine stored in the memory unit to download the patch load routine from the coupled replaceable printing device component

26. The printing device defined in claim 25 wherein the actions further comprise checking for firmware patches available from the replaceable printing device component.

27. The printing device defined in claim 25 wherein the patching action further comprises reading data associated with the software object, and applying the software object according to the data.

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28. The printing device defined in claim 27 wherein the data includes at least one of version data, printing device memory type data, and memory location on the computer readable media.

10 29. The printing device defined in claim 25 wherein the patching action comprises verifying whether the software object stored on the replaceable printing device component is appropriate for patching the firmware.

30. The printing device defined in claim 29 wherein the memory unit comprises
15 media to store the firmware; and wherein the verifying action comprises verifying whether the media storing the firmware is compatible with the software object.

31. The printing device defined in claim 25 wherein the replaceable printing device component stores data indicating a version of the software object and the
20 verifying action comprises verifying whether the version of the software object is compatible with the firmware.

32. The printing device defined in claim 25 wherein the memory unit comprises a media including at least one of a volatile RAM and a non-volatile reprogrammable

memory, and the firmware to be patched is stored on the media, and wherein the patching action comprises patching the firmware on the media.

33. The printing device defined in claim 25 wherein the patching action further
5 comprises at least one of:

patching the firmware into a reprogrammable non-volatile memory of the printing device if the firmware is to execute from the reprogrammable non-volatile memory; and

10 patching the firmware into a volatile RAM of the printing device if the firmware is to execute from the volatile RAM.

34. The printing device defined in claim 25 wherein the patching action further comprises reading from said replaceable printing device the printing device firmware versions to which the printing device firmware stored on the replaceable
15 printing device component is applicable, and patching said printing device firmware only if said printing device firmware version is one of the versions to which the printing device firmware stored on the replaceable printing device component is applicable.

20 35. A method comprising:

coupling a replaceable printing device component to a printing device; and
patching printing device firmware stored on the replaceable printing device component into firmware of the printing device.

36. The method defined in claim 35 wherein said patching comprises patching the firmware into a reprogrammable non-volatile memory of the printing device.

37. The method defined in claim 36 further comprising resetting the printing
5 device after the patching action.

38. The method defined in claim 35 wherein said patching comprises at least one of

patching the firmware into a reprogrammable non-volatile memory of the
10 printing device if the firmware executes from the reprogrammable non-volatile memory; and

patching the firmware into a volatile RAM of the printing device if the firmware executes from the volatile RAM.

15 39. The method defined in claim 35 wherein said patching comprises reading from said replaceable printing device a printing device firmware versions to which the printing device firmware stored on the replaceable printing device component is applicable, and patching said printing device firmware only if said printing device firmware version is one of the versions to which the printing device
20 firmware stored on the replaceable printing device component is applicable.

40. The method defined in claim 35 further comprising initializing the printing device, and wherein the initializing action comprises the patching action.

41. The method defined in claim 35 wherein said patching comprises reading the printing device firmware stored on the replaceable printing device component.

42. A computer readable media having stored thereon a routine that, when
5 executed by at least one processor, causes the processor to perform actions comprising patching firmware stored on a printing device memory unit from a software object stored on a replaceable printing device component.

43. The computer readable media defined in claim 40 wherein the patching action
10 further comprises reading the printing device firmware stored on the replaceable printing device component.

44. The computer readable media defined in claim 42 wherein the patching action further comprises checking for firmware patches available from the replaceable
15 printing device component.

45. The computer readable media defined in claim 42 wherein the patching action further comprises reading data associated with the firmware patch, and applying the firmware patch according to the data.

20 46. The computer readable media defined in claim 42 wherein the patching action further comprises verifying whether the media storing the firmware is compatible with the software object.

47. The computer readable media defined in claim 42 wherein the patching action further comprises verifying whether the version of the firmware patch is compatible with the firmware.